

PRELIMINARY DRAFT SUMMARY

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Washington's Nutrient Profile

Washington's Department of Ecology (Ecology) works to protect and enhance the quantity and quality of the state's water resources. Ecology's Water Quality Program–Watershed Management Section oversees the state's nutrient strategy, utilizing a combination of regulatory tools, prevention programs, and funding mechanisms to control nutrient loads from both point and nonpoint sources. Washington's nutrient reduction efforts are primarily funded by state general funds and agency budgets, as well as CWA 319 funds. Washington's Water Pollution Control Act regulates nonpoint pollution as well as point source, and this provides a foundation for addressing nonpoint pollution in Washington State that is unique compared to other states and is critical to success in addressing water quality in Washington.

To reduce the impact of nutrients, the state is implementing its Nonpoint Nutrient Strategy, which is designed to use a variety of techniques simultaneously to address nonpoint pollution. The strategy focuses on the implementation of BMPs that protect water quality. The primary tools used to guide and promote implementation are:

- TMDL implementation plans;
- Straight to Implementation (STI); and
- Grant and Loan program and its funding guidelines

Additionally, when an opportunity exists Ecology takes advantage of other tools and advantageous watershed conditions. For example, Ecology developed a trading framework that can be used to take advantage of market based principles in the right type of watershed. Ecology's complaint response system also provides tools to address reported sites through technical assistance, education, referrals, or in limited circumstances, escalating enforcement.

1. Nutrient Strategy

- a. Is the state developing or does it have an overarching nutrient strategy?** Yes the state has developed and is implementing a comprehensive nutrient strategy designed to address specific sources of nutrient pollution found in Washington State. To achieve regulatory clarity and provide regulatory certainty to nonpoint pollution dischargers, Ecology is working

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toward identifying suites of approved BMPs for land use practices that create nonpoint pollution. If a person implements the applicable suite of BMPs, Ecology will presume compliance with the WPCA and water quality standards. Using the Ecology approved BMPs can speed you through the regulatory process, and make it easy to demonstrate compliance. The state believes that providing clear standards, through approved suites of BMPs, and a regulatory certainty framework for nonpoint sources presents an important opportunity to take a more comprehensive approach to address nutrient pollution. The state addresses specific nutrient issues directly in key watersheds with significant nutrient issues as well as addressing statewide nutrient issues through its TMDL and Straight to Implementation (STI) programs.

- b. If yes, what is the timeframe for completion?** The strategy is complete, in that Ecology has a strategy that it is implementing.

2. Element 1: Prioritization

- a. What is the key approach for prioritizing nutrient reductions statewide?** Washington's statewide nutrient strategy uses protective dissolved oxygen and pH criteria as indicators of potential nutrient problems for rivers and streams. The state's TMDLs and STI projects are organized around indicators (DO and pH—usually as part of a multi-parameter TMDL or STI project) and watersheds. The state also addresses obvious nutrient pollution issues by using its nonpoint authority to directly resolve problems. In geographic areas where significant nutrient issues have been identified, Ecology may lead or participate in a large-scale effort to protect groundwater or address fecal coliform issues impacting shellfish beds.
- i. If a geographic or combination approach is being proposed, what criteria are used to select watersheds for implementation?** Ecology organizes targeted efforts, compliance response, and enforcement around both pollution sources and watersheds, while grant and loan programs can be organized around watersheds, indicators, and/or pollution sources. Groundwater nitrates are the focus in the Yakima Valley; low DO is the focus in Puget Sound; nutrient and fecal issues are a

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priority in the Samish watershed, the Whatcom/Nooksack area and any other areas where there are shellfish closures and groundwater problems. Protective permits are in place to address phosphorus loading to the Spokane River and Wenatchee. Ecology's implementation plans' primary focus on pollutant sources. Washington's nutrient reduction program primarily targets wastewater treatment plants, septic systems, stormwater, farmland, animal feeding operations, and other land use areas that are proven sources of nutrient contamination.

- ii. **If sector based, what sectors are covered?** Ecology's approach is not sector based.
- iii. **TMDLs? If so, how are they prioritized statewide?** The state has a process to schedule TMDLs based on priorities. Those priorities consider many factors not just nutrients, including severity of the water quality problem, likelihood of a TMDL being implemented, and whether a TMDL is the best strategy to get to clean water. In watersheds in which the pollution problem is well understood and where it is obvious which BMPs need to be implemented to address nutrient pollution sources, Ecology may use a Straight to Implementation strategy instead of a TMDL.
- iv. **Source water prioritization: How is source water protection addressed?** All public water systems are required to develop and implement a source water protection program as part of their water system planning.
 - 1. **Is there an active nutrient source reduction effort underway in drainage areas for surface water drinking water intakes?** No.
 - 2. **How are underground sources of drinking water addressed?** Washington recognizes sources of public drinking water systems (wellhead protection areas, i.e. groundwater or surface water watersheds) under the state's Critical Aquifer Recharge Area as part of the state's Growth Management Act. Washington also has groundwater standards that are used to permit and protect groundwater in the state. Additionally, there is a specific effort underway to address and remedy the nitrate groundwater contamination

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problem in the Yakima Valley, a rural, agricultural area with numerous dairies. There are other nutrient issues being addressed in the Whatcom aquifer area as we struggle to get surface water and groundwater pollution issues addressed. Addressing shellfish closures and nutrient/nitrate pollution in Whatcom County is a state priority and part of the Governor's Shellfish Initiative.

- 3. Are delineated source water protection areas and other source water data, e.g., nitrate MCL violations or water supplier data on elevated nitrate levels in source water, being used to identify priority sub-watersheds?** At the moment, Washington does not use source water protection location information, drinking water monitoring data, or source water protection plans to identify priority watersheds or prioritize TMDLs. However, when available, this information is factored into our TMDLs and TMDL implementation plans. Washington is working to develop a groundwater nitrate vulnerability data layer to be used by all regulatory and natural resources agencies. This would be similar to the groundwater vulnerability work done in Idaho.
- 4. How will existing Source Water Protection Plans be included in watershed or sub-watershed planning and implementation of nutrient reduction actions?** Unclear at this time.

- b. Who are the stakeholder/partners/cooperator programs or entities engaged in prioritization (e.g., which State agencies/programs, interstate organizations Federal agencies, industry organizations, environmental organizations, NGOs)?** In theory, Ecology should have lots of partners, because a long list of agencies and organizations claim to be working on this issue. However, as is playing out nationally, many are still trying to deny that there is a problem or that their members cause any pollution problems. EPA did

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provide good help and support in the Yakima valley. Tribal organizations have been active supporters, as have some environmental groups.

- i. **What sorts of programs/initiatives/practices are leveraged in priority watershed(s)?** Implementation projects proposed for funding in our grant and loan programs are given extra points if the implementation is part of a TMDL implementation plan or a STI strategy.
- ii. **How are funding sources (including, e.g., CRP, CREP, EQIP, WRP, 319, CWSRF) targeted in support of this prioritization effort?** Funding offered by the state is prioritized as described above. This includes 319 funds and CWSRF. Other funds, especially those administered by NRCS and the state Conservation Commission, are not prioritized to help with state identified nutrient areas. Ecology has been trying to work with NRCS and has elevated that effort to the Directors Talks. We have highlighted the need to have EPA and NRCS coordinating with the state water quality authority on this national watershed initiative along with providing other grants that might not address nutrient pollution in these priority watersheds.

3. Element 2: Load Reduction Targets

- a. **How does the state set load reduction targets? Through TMDLs only or other statewide targeting?** Through TMDLs and Straight to Implementation.
- b. **Are the proposed nutrient reductions designed to achieve:**
 - i. **Protection of local water resources (including drinking water)?** Variable—some end points are aquatic life protection (i.e., low dissolved oxygen in Lake Spokane). Washington's dissolved oxygen criteria to protect aquatic life drive very protective nutrient allocations in TMDLS. In the TMDL context the main surrogate for nutrients is low dissolved oxygen as an end point in surface waters.
 - ii. **Downstream goals (e.g., Chesapeake Bay, Great Lakes, Gulf of Mexico, other, etc.)?** Some TMDLs, i.e., Spokane River TMDL, are written to protect downstream end points or downstream standards.

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iii. **Nutrient TMDLs?** There some specific TMDLs that address nutrients.

	Total TMDL Projects addressing DO or Nutrients	Number of TMDL Projects that include allocations for the following categories		
		Total Nitrogen or Ammonia*	Total Phosphorus or other form*	Dissolved Oxygen or Biological Oxygen Demand
Approved TMDL Projects	34	17	16	21
In Development TMDL Projects	12	**	**	**

* Projects addressing Ammonia or Total Phosphorus were typically just for that pollutant. Projects addressing Dissolved Oxygen often use Nitrogen or Phosphorus targets as surrogates, but sometimes may not include nutrient surrogates.

** These projects do not have established pollutant allocations yet, but could possibly have allocations in any of these three categories

- c. **Are there (or will there be established) quantitative watershed nutrient reduction targets statewide (i.e., besides TMDLs)?** This will be impossible given the diversity of Washington's water bodies. The state's dissolved oxygen criteria will drive very protective nutrient limits.
- d. **What nutrient load reduction is needed?** This depends on the condition of a specific watershed.
- e. **Do reduction targets amount to a substantial portion (e.g., 80%) of the statewide reductions needed?** Washington does not have a statewide nutrient reduction target.
- f. **Is there a difference between what is needed and what is achievable?** This is not applicable in Washington, since there is no statewide nutrient reduction target.

4. **If TMDLs are the state's key means for nutrient prioritization and targeting (i.e., from questions 2a. and 3 a.):**

- a. **Does the state assess and list for N and P impairments?** No, because Washington has a very protective Dissolved Oxygen (DO) criteria that will drive nutrient reduction goals. Some

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priority watersheds (i.e., Spokane, Wenatchee, Deschutes, Puget Sound) are assessed and addressed through TMDLs. Additionally, there has been a comprehensive assessment of whether the low dissolved oxygen levels in Puget Sound are caused by anthropogenic sources, including discharges of nitrogen. Recent results indicate that anthropogenic sources may not be a big factor in the DO depressions.

State Water Quality Assessment Results as Reflected in Most Recent Integrated or 305(b) Report

River miles assessed (Number of listings – all parameters)	% River miles assessed	River miles with nutrient-related impairment (Number of listings DO-TP-TN Category 5)	% of Assessed rivers with nutrient-related impairment (% of listings with nutrient-related impairment)	River miles with nutrient-related impairment TMDLs or alternative restoration plan (Number of listings DO-TP-TN Category 4A or 4B)	% nutrient-impaired with TMDL or alternative restoration plan (% of nutrient-related listings with TMDL or alternative restoration plan)
2162		515	23%	117	23
Lake/Reservoir Acres assessed (Number of listings – all parameters)	% Lakes/Reservoirs assessed	Acres with nutrient-related impairment (Number of listings DO-TP-TN)	% of Assessed Lakes/Reservoirs with nutrient-related impairment (% of listings with nutrient-related impairment)	Acres with nutrient-related impairment TMDLs or alternative restoration plan (Number of listings DO-	% nutrient-impaired with TMDL or alternative restoration plan (% of nutrient-related listings with

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				TP-TN Category 4A or 4B)	TMDL or alternative restoration plan)
187		42	22%	11	26%
Estuary/Bay Assessed – mi ² (Marine, Number of listings – all parameters)	% Estuary/Bay assessed (Marine)	Mi ² Bays/Estuaries with nutrient- related impairment (Number of listings DO-TP- TN)	% Assessed Bays/Estuaries with nutrient- related impairments (% of listings with nutrient-related impairments)	Mi ² with nutrient- related impairment TMDLs or alternative restoration plan (Number of listings DO- TP-TN Category 4A or 4B)	% nutrient- impaired with TMDL or alternative restoration plan (% of nutrient- related listings with TMDL or alternative restoration plan)
978		140	14%	4	3%

b. If not, does the state currently assess and list for nutrient surrogates? Which ones (DO, pH, Chl-a, algal blooms, turbidity, etc.)? Generally, DO is the most sensitive nutrient surrogate that is assessed and then an evaluation is made as to whether phosphorus or nitrogen is driving the impairment.

c. How does the state's nutrient approach address protection of healthy watersheds?

Washington has generally focused on impaired watersheds. However, when the agency investigates a complaint or finds an egregious pollution problem, it uses its nonpoint authority to address the issue whether the receiving water is impaired or not. Washington's

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Water Pollution Control Act prohibits discharge of pollutants regardless of the condition of the receiving water.

- 5. Element 3: Point Source Effectiveness** — (data from Ecology's Permitting and Information Reporting System (PARIS), June 2013).

Total # Individual Permits

Majors	Minors	Unknown	Total
73	357		430

- a. Is monitoring nitrogen and phosphorous required of majors? Minors? Stormwater Phase II or CAFO Permits?

Monitoring Only

# Majors	# Minors	# Total	% Majors	% Minors	%Total
30	103	133	41	29	31

Washington requires nitrogen monitoring for majors and some minors when they discharge to marine waters and requires monitoring for both nitrogen and phosphorus for dischargers who discharge to fresh water when impairment, TMDLs, effluent guidelines, or facility specific factors warrant it.

- b. Are there nutrient limits in all majors? Minors? Stormwater Phase II or CAFO Permits?
What are these limits based on?

Limits Only

# Majors	# Minors	# Total	% Majors	% Minors	%Total
5	15	20	4	4	5

Where there is a TMDL for nutrients (or a surrogate for nutrients—i.e., DO), stringent permit limits are required and put in place. For example, phosphorus limits to reduce the phosphorus loadings to the Spokane River). In the absence of an impairment list and

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development of a TMDL, monitoring may be required in permits. The State does not routinely do reasonable potential analyses for nutrients when it develops permits for dischargers. State permits include the ability to order abatement of discharges.

- c. If not, why not?** Washington does not have numeric criteria for nutrients. Numeric targets are developed in the context of TMDLs.
- d. What is the state's strategy for incorporating water quality based nutrient limits into permits?** The State establishes nutrient targets in TMDLs and those targets are incorporated into NPDES permits, as appropriate.

6. Element 4: Agricultural Areas

a. How have or will the intended watersheds and practices, or practice systems be identified? To address nutrient pollution from nonpoint sources, use of Ecology-approved suites of BMPs (made up of foundational and supporting BMPs) can provide presumed compliance with the water quality standards and state water quality law. For example, to address nutrient pollution from livestock operations, the state recognizes three foundational BMPs: the Riparian Forest Buffer (NRCS 391), Fence (NRCS 382), and off-stream Watering Facility (NRCS 614). The Riparian Forest Buffer which has a thirty-five foot minimum width requirement is used as the primary means to reduce delivery of nutrients to waters of the state. The fence and off-stream Watering Facility are needed to support the permanent exclusion of animals from surface waters and the riparian buffer zone. Additional supporting practices, such as heavy use area protection and waste storage facility siting and design may be required based on site-specific factors. A similar set of foundational and supporting practices apply to manure application.

- i. Who are the state's collaborators in prioritizing, setting targets and implementation planning for ag nutrient reduction?** Many are trying to make nutrient reduction real and work. As stated earlier the politics that are playing out on this issue nationally are also playing out in our state. We do have exciting efforts happening with the no-till dryland wheat community and the shellfish aquaculture

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community has been vocal in the impacts to their farming practices caused by others that are not doing their part to control nutrient pollution.

- ii. **What role do USDA initiatives (MRBI, NWQI, etc.) play in the state's priority watersheds?** To date, USDA and Ecology have not worked to target funds to priorities identified by the state. Through the state Director's Talks the State is trying to get better coordination with that federal agency and their federal dollars to address nutrient problems in Washington.

Are there overlaps with any other federal program priority watershed areas?

There is some overlap with the Puget Sound National Estuary Program. NRCS has not been interested in aligning any of its priorities with the state.

7. Element 5: Storm water and septic

- a. **How will the state address any needed nutrient reductions from these sources?** For stormwater, BMP guidance is provided in stormwater manuals.

8. Element 6: Accountability and Verification Measures

Washington's TMDL settlement agreement requires periodic reporting on the status of TMDL implementation. Ecology publishes an annual report of enforcement activities. NPDES permits have accountability built in to meeting the conditions of the permit.

- a. **Does the state make its nutrient framework/strategy/activities publicly available, e.g., online?** No.
- b. **How will BMP implementation be tracked and nutrient reduction/pollutant be measured/estimated?** Undecided at this time.
 - i. **Are there established baselines of existing loads and existing BMP implementation?** No.
 - ii. **Are nutrient reduction target milestones identified; short-term, long-term?** No.
- c. **How will information/data be managed and tracked to verify and report progress and support adaptive management?** Unknown at this time.

9. Element 7: Annual Public Reporting

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a. What is the state's public process to share the annual status report and solicit feedback?

Washington does not have a process to do this.

b. Element 8: Numeric Nutrient Criteria

- Lakes/reservoirs: Site-specific TP criteria
- Rivers/streams: Site-specific TP criteria

The state of Washington recognized the importance of nutrient criteria in the mid-nineties and subsequently adopted a process for developing lake nutrient criteria into its water quality standards in 1997. Developing statewide nutrient criteria for fresh water rivers and streams was not considered viable because of the large and diverse dynamics of our river systems in Washington. Instead, Washington relies on dissolved oxygen and pH criteria as indicators of potential nutrient problems for rivers and streams.

When criteria development for lakes nutrients was underway (prior to the 1997 standards revision), a parallel effort evaluated "the feasibility and benefits of establishing nutrient criteria for flowing water systems. Ecology examined periphyton growth, chlorophyll *a*, nitrogen, and total phosphorous levels in ecoregions on the west and east sides of the state. Ecology's researchers were unable to find a predictive relationship between excess production and eutrophication, and measured nutrient concentrations. Flow rates, shading, and available light are also confounding factors in eutrophication processes in streams and rivers."¹ So efforts to develop statewide nutrient criteria for river and stream systems were not successful in the late nineties.

¹ Allen Moore, A., Hicks, M., 2004 Nutrient Criteria Development in Washington State - Phosphorus Washington State Department of Ecology, Olympia, WA. Publication Number 04-10-033; P iv
<http://www.ecy.wa.gov/pubs/0410033.pdf>